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Extra copies of this journal may be obtained at 50c each to members and $1 each to non-members.

Your Society—Your Journal

COST AND MANAGEMENT appears this month in a new form. As most of the members are aware, the publication of a magazine by the Canadian Society of Cost Accountants was decided upon at our annual meeting last August. Four issues of considerable size were published. With this experience, your executive decided that the new form will be more convenient, give adequate publicity to the affairs of the Society and to matters in which it is interested, and place less strain upon the finances of the Society. A journal of this type has been found the most satisfactory, by many other organizations similar to the Canadian Society of Cost Accountants. For the present, at least, no advertising will be carried.

The policy of printing in some detail those addresses of widest interest, will be continued. It is also our desire to give due publicity to every address and discussion before each chapter, through the publication of summaries or extracts. "Members' Problems" will be duly attended to, and selected answers published. "Chapter Notes" will record the activities and plans of each branch of the Society. Lists of "Positions Vacant" and "Positions Desired" will be published as received, each notice to appear in two consecutive issues.

As this organization is your Society, so is COST AND MANAGEMENT your journal. Officers of the Chapters are earnestly requested to secure and forward copies of addresses given at their meetings, and to send in reports of discussions and other items of interest. Every member is invited to advise the executive of matters which he believes would be of interest to the Society as a whole.

The success of any society depends upon each member as well as upon its officers. Make use of our "Members' Problems" department by asking advice when you are uncertain. Read every issue of COST AND MANAGEMENT from cover to cover—your officers are trying to give you the best there is. And be ready to co-operate in the work of your own Chapter and of the Society as a whole.

Wage Incentives

By A. E. KEEN, C.A.
Thorne, Mulholland, Howson and McPherson, Chartered Accountants, Hamilton

(An address before the Hamilton Chapter, December 16, 1926.)

THE goodwill of the employees towards their employer is one of the most valuable assets of any business. We see, from time to time, large valuations placed on the items of goodwill in the balance sheets of corporations and our usual interpretation is that this refers to the goodwill of customers. I think that too little emphasis has been placed on the development of goodwill within the industrial organizations of our country. The proper understanding and application of the subject of wage incentives would develop and increase the goodwill of the employee to a marked degree.

What are wage incentives? Perhaps the simplest definition would be as follows:

Wage incentives proper are systems of paying wages designed to increase the earnings of the worker by developing, and rewarding when developed, his ability to produce in larger quantities in a given time.

Given increasing per capita production we shall have a rising standard of living, but if individual production declines, the standard of living will fall. It is therefore evident that the subject before us tonight is quite an important link in the industrial chain.

There is no single system of wage incentives which is the best under all conditions. It is necessary to study the conditions in each plant thoroughly before determining which plan will best fit the particular conditions existing.

Any plan worthy of adoption should possess most of the following features:—

1. Be easy for the worker to understand.
2. Be simple to compute and thus economical in administration.
3. Possess ability to decrease costs, by increasing production.

4. Possess ability to increase the wages of the worker.
5. Protect the worker from the practice of rate cutting.
6. Protect the employer as to quality of product and safety of the machinery.
7. Be flexible in changing circumstances.

Following are the most important of the wage incentive plans which have been evolved to date. In order not to weary you with a detailed description of these plans in this paper, I have prepared for distribution a summary of the chief points of the six main ones, which you can examine at your leisure, together with a comparison of these systems.

1. Day Rate or Time Rate.
2. Straight Piece Rate Plan.
3. Emerson Efficiency Bonus Plan.
4. Halsey Wage Plan.
5. Rowan Premium Plan.
6. Barth Premium Plan.
7. Taylor Differential Rate Plan.
8. Merrick Multiple Piece Rate Plan.
9. Gantt Task & Bonus Plan.
10. Haynes Manit Plan.
11. Bedeaux plan (point system).

Straight Piece-Rate Plan

Piece rate is that method of payment in which the worker is paid a constant rate per unit produced. This is not a one-sided bargain like time payment, but may be nearly as inefficient if either time or rate is carelessly set. Piece rates are sounder in principle than time rates and fully as simple to understand. Wages per day are not guaranteed and worker's earnings will depend mainly upon his own effort.

The piece rate is discouraging to a beginner, but furnishes an opportunity for every ambitious and capable worker to raise himself to a high wage per day. So important is this latter feature that any interfence on part of employer with an established rate destroys the whole merit of the plan. Wherever an employer has a definite limit for

maximum wage per day, and has cut piece rates to keep wages within this limit, employees quickly discover such limit and systematically keep production below that point. Piece rates, so abused, are no better than day rates. Employers who think such practices expedient overlook gains which come from distribution of over-head over a larger daily production.

Under this system the employee takes all gains or losses from his own labor. A piece rate plan is therefore more generous to the worker than any of the plans which share direct labor saving with employer. For this reason the piece rate plan is sometimes called a "100% Time Premium Plan." When considered as a premium plan it is presented on basis of time saved. Psychological advantage is claimed for this presentation.

As in time work there may be low producers and it is necessary to try these out and give them a fair chance. Ambitious and needy workers may, under piece-work, go beyond what is consistent with health and this should be guarded against.

Halsey Premium or Gain Sharing Plan

This the earliest modern incentive plan was worked out by Mr. F. A. Halsey, while superintendent of the Rand Drill Company of Sherbrooke, Quebec. The regular day wage is guaranteed to the workman and he is allowed to choose whether or not he will work for a premium. A standard task time is set from records of previous experience, not by modern motion study, etc. The amount of time which the workman can save multiplied by his hourly rate is divided between employer and employee, the employee receiving up to one-half according to agreement.

Example:

Standard time for job 10 hours. Pay $3.00 per day or 30c per hour. Agreed worker is to receive one-half of time saved. If job is done in 9 hours, saving 1 hour

$$\text{Premium} = \frac{1 \times 30}{2} = 15 \text{ cents}$$

Rowan Premium Plan

This plan was intended by James Rowan to be merely an improvement on the Halsey plan. It so protects the

employer that the worker receives a decreasing share of the labor saved as production increases until at twice the production set by the standard task the bonus ceases.

The premium is calculated by the following formula:

$$\text{Premium} = \text{Day rate for time consumed} \frac{\text{X Time Saved}}{\text{Standard Time}}$$

Example (using same data as in Halsey):

Standard time 10 hours. Day rate $3.00 per day. If work is performed in 9 hours, saving is 1 hour.

$$\text{Premium} = \frac{2.70 \times 1}{10} = 27\text{c}$$

Pay for 9 hours' work, 2.70+27=$2.97

Pay for 10 hours' work, = 3.30 per day.

Taylor Differential Piece Rate Plan

This plan was developed by F. W. Taylor, in 1884. Taylor had found that low wages did not necessarily mean low cost. He believed that to secure lower cost a high wage was necessary and was the first to point the necessity of scientifically arriving at what should be considered a fair day's work by exhaustive study of each individual task. He believed also that low producers should be penalized and high producers generously rewarded. Two differential piece rates, one low, and one high, are used in this plan. He put the step from the low to the high rate at the standard task point and he insisted that this step up in rate be of an appreciable amount.

No other wage plan has ever offered so strong an incentive to the ambitious and skilful worker.

Example of Earning:

Task=100 pieces

Low Piece Rate .03c per piece

High Piece Rate .05c per piece

A. Worker—Production: 80 pieces × .03c=$2.40 per day

B. Worker—Production: 110 pieces × .05c= 5.50 per day

Gantt Task and Bonus Plan

H. L. Gantt, a former associate of Taylor, devised this plan to utilize the strong incentive of the Taylor differential plan and eliminate the drastic effect of the low piece rate for low production. A high task standard is set by time study

and regular day wages are guaranteed until the amount of production equal to standard is accomplished. If he reaches the standard he is paid a bonus which may be 25% or 33 1/3 the standard he is paid a bonus which may be 25% or 33 1/3% of his regular wages.

A very important feature of the Gantt plan is that it provides for a bonus to be paid the foreman for every man under him, who makes a bonus. Thus if a foreman had twenty men under him and fifteen made their bonus and the foreman's bonus was 10c. per day per man, the foreman would receive $1.50 per day bonus.

The result in practice has been to make the foreman take greater interest in training the men to reach the bonus standard.

Example of Workers' Earnings:

Assume standard task is production of 30 bolts per day. Day rate $3.00 for ten hours.

Time for each bolt=.333 hours.

Bonus is set at 33 1/3% of time allowed.

If just 30 bolts are made he earns bonus, as follows: 10+10 1/3=13.33 hours @ 30c. per hour=$4.00 per day.

If he makes 40 bolts he would be credited with the time allowed for 40 bolts or $40 \times .333 = 13.32$ hours. and also credited with premium of 1/3 of that time 4.44 hours

Earnings for 40 bolts @ 30c. per hour $\times$ 17.76 hours equals $5.33 per day.

Emerson Bonus Plan

This plan devised by Harrington Emerson consists of a guaranteed day wage up to 67% of task level. From this point on to full task the worker is paid an arbitrary bonus depending on his performance or efficiency. Bonuses gradually rise to a total of 20% at task standard and proceed to higher bonus rates according as efficiency increases. *Example:*

Standard time or task for a certain job=60 hours.

If work is performed in 60 hours' efficiency=100 per cent.

If work is performed in 50 hours' efficiency=$\frac{100 \times 60}{50}$

or 120 per cent.

Emerson Bonus Rates

Efficiency per cent.	Bonus per $1.00 wages	Efficiency per cent.	Bonus per $1.00 wages	Efficiency per cent.	Bonus per $1.00 wages	Efficiency per cent.	Bonus per $1.00 wages
67	0.0001	78	0.0238	88	0.0832	99	0.1881
68	0.0004	79	0.0280	89	0.0911	100	0.20
69	0.0011	80	0.0327	90	0.0991	101	0.21
70	0.0022	81	0.0378	91	0.1074	102	0.22
71	0.0037	82	0.0433	92	0.1162	103	0.23
72	0.0055	83	0.0492	93	0,1256	105	0.25
73	0.0076	84	0.0553	94	0.1352	110	0.30
74	0.0102	85	0.0617	95	0.1453	120	0.40
75	0.0131	86	0.0684	96	0.1557	130	0.50
76	0.0164	87	0.0756	97	0.1662	135	0.55
77	0.0199	87.5	0.0794	98	0.1770	140	0.60

Comparison of Wage Systems*

"Any comparisons in terms of numbers must be construed as being merely suggestive and in no sense conclusive. Such comparisons, however, may serve to show more clearly the relative importance of certain features as viewed by employer and employee, even though the assumptions on which they rest are not absolutely accurate.

"Let it be assumed then that the worker under good day-pay conditions is producing 15 bolts per day and is receiving $3.00 per day. Suppose also that the cost of operating the machine, i.e., for power, light, etc., is $4.00 per day and that the cost of the material in each bolt is five cents. Let it be assumed also that when the worker is put on piece-work, he is paid 15 cents per bolt and that when he is working under the Halsey premium, he is expected to produce 20 bolts per day before receiving a premium, this premium being one-third of the time saved. Under the Rowan plan the 20 bolts in a standard day of 10 hours is made the basis for figuring the premium. Assume that under the Taylor differential piece rate the highest price is 15 cents per bolt and that 10 cents is the lowest rate.

"Suppose again that under the Gantt and Emerson systems of payment he is expected to produce 30 bolts per day before receiving a premium; that under the Gantt system the bonus is 33 1/3 per cent., and that under the Emerson plan his premium is set according to the table. Let it be

*N.B. For the section of this paper under the heading of "Comparison of Wages Systems" acknowledgments are made to the Alexander Hamilton Institute for permission to utilize this extract from their excellent volume on "Plant Management."

assumed further that the cost of operating the machine under these three advanced methods is raised to $5.00 per day because of the preparation and supervision involved. Then the cost per bolt for varying production and under the several methods is as given in the following table:

Comparison of Unit Costs Under Different Wage Systems

	Cost per bolt in cents for varying production					
Wage System	10 bolts	15 bolts	20 bolts	25 bolts	30 bolts	40 bolts
Day pay	75	51⅔	40	33	28⅓	22½
Piecework	60	46⅔	40	36	33⅓	30
Halsey Premium	75	51⅔	40	34	30	25
Rowan Premium	75	51⅔	40	35⅓	31⅔	26¼
Taylor differential piece	65	48⅓	40	35	36⅔	32½
Gantt task and bonus	85	58⅓	45	37	35	30¾
Emerson efficiency†	85	58⅓	45	37⅔	33⅔	29

"An examination of this table will show that the unit cost is less under day-work as the production increases than under any other method. This is logical, since the worker's pay is not increased, and if, therefore, the greater production can be obtained under day-work, that is the cheapest way of obtaining it. It will be noted, furthermore, that the unit cost is greater under straight piecework for increased production than under any other method except in a few instances under the advanced methods. Straight piecework is obviously an expensive method of remuneration, since the worker obtains full benefit in pay due to increased production. But it is clear, also, that there are limitations to the amount of money one can spend in preparation and supervision and still keep the unit cost down below that of the older pay systems. In making comparisons of these unit costs it should be remembered that probably not more than 15 bolts will be produced under day pay and not more than 20 or 25, at most, under piecework and the Halsey plan; while under the Taylor, Gantt and Emerson systems there is a presumption that the production will rise to 30 per day. In fact if it does not rise to this amount, the new methods would have little or no advantage over the old methods. There is, however, an indirect gain due to increased production even though the unit labor cost is not decreased, because of the fact that other elements of the total unit cost are lessened by such an increase.

"*Comparison of Wages:* The employer, who is naturally concerned with unit costs, will be most interested in those

†30 bolts 67%

aspects of wage methods that have just been presented. The worker, however, is interested in other aspects of these methods. The following table gives the earnings of the workman for the same conditions and output as were used to compute the foregoing table on unit costs:

Comparison of Earnings Under Different Wage Systems

Wage System	Workman's earnings in dollars for varying production					
	10 bolts	15 bolts	20 bolts	25 bolts	30 bolts	40 bolts
Day pay	3.00	3.00	3.00	3.00	3.00	3.00
Piecework	1.50	2.25	3.00	3.75	4.50	6.00
Halsey premium	3.00	3.00	3.00	3.25	3.50	4.00
Rowan premium	3.00	3.00	3.00	3.60	4.00	4.50
Taylor differential piece	1.00	1.50	2.00	2.50	4.50	6.00
Gantt task and bonus	3.00	3.00	3.00	3.00	4.00	5.33
Emerson efficiency	3.00	3.00	3.00	3.15	3.60	4.62

"While, as has been noted, these figures are suggestive only, they give an idea of the relative merits of the several methods of pay. It will appear that day-work in general gives the worker the smallest reward, though in return it protects him against loss should he fail to do even a fair day's work. Piecework on the other hand promises the greatest reward, but this is offset to some degree by the penalizing effect of piecework under low production. This effect is very marked, it will be noted, in the Taylor differential piece rate method. The earnings under the more advanced methods, where the worker is assured his day pay, lie for the most part between piecework and day-work, as would be expected since money must be expended to plan and supervise these higher productions.

"In the data chosen, the upper piece rate of the Taylor differential system is probably placed somewhat high in relation to the other factors. It should be remembered, also, in making comparisons that the worker's chances of attaining a high wage are greater under the advanced methods than under the older methods which are based upon fixed day rate or upon the worker's initiative."

I will briefly describe the other plans not described in detail.

Barth Premium Plan:—This is merely a variation of the Halsey Plan.

Merrick Multiple Piece Rate Plan:—Similar to Taylor Differential Plan but having three rates per piece instead of two. The lowest rate for beginners—an intermediate

rate for so-called average workers—and the high rate for those who are able to exceed the standard.

Haynes Manit System:—This plan, devised by Hasbrouck H. Haynes, may be used with either a low or medium task level. In either case it guarantees time wages and emphasizes measurement of performance.

Bedeaux Point Premium Plan:—This plan provides for a supervisory bonus above standard so that it, together with that for direct labor, equals piece rate. In other words, saving in earning is divided between direct and indirect labor responsible for it in ratio 3 to 1. Below standard the day wage is guaranteed. The basis is a point called Bedeaux or "B." This is merely amount of work assigned to 1/60th of an hour or to a minute as in the Haynes Manit Plan. Rate of pay is also reduced to a minute basis, and task is always indicated as 60 B's times hours per day. It is claimed that this (B) unit permits measurement of efficiency between departments and between plants. Wage is less generous to employees than piecework.

The foundation of practically all the foregoing plans is setting up a standard time in which the task should be performed. In a great many cases this is the point at which the system breaks down through management not taking sufficient care in establishing the standard. Wages must be in proper relation to what is produced and it is therefore very important that these standards be properly set. This is best accomplished by careful time studies of the operations to be performed. We should therefore briefly consider this question of time studies.

Motion and time study or job standardization may be divided into;—

1. *Preliminary*—Recording and analyzing existing conditions as to method and equipment to determine whether the best obtainable are being used.

2. *Time and Motion Study*—(a) Breaking down the operation into its smallest motion elements, together with a critical study of these elements eliminating unnecessary delays, discarding useless and inefficient elements. Improving the remaining ones until they are the best obtainable.

(b) Putting together these improved elements into the best combination and training the worker on the new basis until habit makes it automatic.

(c) Determining allowances for necessary delay and fatigue.

3. Rate Setting—Determining proper wage rate and incentives.

4. Instruction and Training—Drawing up detailed instructions covering tools, necessary elemental operations involved in detail and in proper sequence with time allowed for each and rate of pay, Training workmen to perform the task in time and manner set.

Any detailed consideration of the subject of Time and Motion study would take far longer than the time which we have at our disposal to-night and I do not propose to go into the details of it but merely to emphasize its importance in connection with the various wage incentive plans.

Group Bonus Plan

Group Bonuses paid to everyone in a group or department according to the efficiency of the group as a whole have come into popularity because they are considered easier to install than individual bonuses. They have given satisfaction in many large concerns but should not be adopted without careful consideration. If operators whose jobs are unrelated are grouped together and rewarded according to group performance there is danger of poor operators profiting from the hard work of others or danger of good operators losing their reward because of the poor ones.

I read the other day an interesting booklet issued by the Metropolitan Life Insurance Company, Policyholders' Service Bureau. It recites examples of a number of large American concerns, who are using group bonus plans, these include:

The Packard Motor Car Company, Detroit.

The Hudson Motor Car Company.

The Westinghouse Electric Company.

Worthington Pump and Machinery Company, and others.

I would like to quote from this booklet as follows:

"One of the most successful practitioners of the group method of wage payment is the Packard Motor Car Company, and its procedure is succinctly set forth by J. H. Marks, industrial engineer of that company, in the following paragraphs:

"1. We use a group bonus plan throughout all of our productive departments. We do not believe that we lose the

advantage of individual initiative for the reason that the members of each group who have ideas or knowledge of methods that will increase the output of the group have every incentive to use their ideas themselves as well as to transmit them to their fellows.

"2. The computation for purposes of determining wages and for cost are very much simpler by our method. It is only necessary for us to keep track of the output of each group rather than the output of each individual. We count only finished parts so that it is not necessary to keep track of operations, which would be the case if we had an individual incentive plan.

"3. We do not lose quality of production for the reason that our inspection department is entirely independent of the wage payment plan and is particularly charged with the responsibility of maintaining quality, understanding that there is always a tendency to slight the work when the workmen are engaged in an incentive plan.

"4. The standards for each operation are established through standard times which are set as the result of time study. It is possible for us to get operation costs but we are interested primarily in the cost of a completed product.

"Deviations from the standard are reported by means of time tickets, and these, by the way, are the only time tickets used in productive departments which give all the necessary information for obtaining the cost of methods other than standard.

"Our method involves the setting of standard times on each operation on each part entering into the product, summarizing these time standards according to the operations performed by each group. The time value of the completed product as reported by the inspection department which is independent of the incentive plan is computed daily and summarized by each bi-monthly pay period so that by comparing the standard time value of the work turned out each day and each pay period with the elapsed time required by the workmen in the group to turn out this work, we obtain a *ratio* between the work turned out and the time required to turn it out.

"Our proposition to the workmen is that we agree to pay 1 per cent. bonus on top of regular wages for each per cent. that the above described ration exceeds a predetermined point for an entire pay period. The standard

of ratio or efficiency varies from 70 per cent. to 80 per cent., depending upon the kind of work done in each group. As the average efficiency of our plant is approximately 90 per cent. the bonus earned varies from 10 per cent. to 20 per cent.

"We obtain our cost control through the fact that after standard efficiency is reached the cost is practically constant so that we know that if a standard of efficiency in excess of the starting point is maintained the costs are at or below standard."

A number of other plants describe similar plans, the common threads in them being:

1. There is a guaranteed wage in nearly all cases.
2. The rates paid are mostly set as a result of careful time studies.
3. Adequate Inspection systems protect the companies as to quality of the product.
4. Group bonus systems materially simplify payroll and cost accounts.

Time will not permit any detailed description of other types of incentives and it will have to suffice merely to mention them. As with the foregoing, detailed information regarding these subjects is constantly appearing in articles and in book form and is available for those who are inclined to research along these lines.

For example:

Incentives for Waste reduction.

Profit sharing plans.

Group insurance schemes.

Pensions.

The Operation of a Modern Cost System

By L. RHODES

Consolidated Lithograving and Manufacturing Company, Ltd., Montreal.

(An address before the Montreal Chapter, November 26, 1926)

PART I.

YOU will notice on the Programme of Meetings that my subject is entitled "The Operation of a Modern Cost System." This designation I may say is not my own choice, but rather one that was handed to me. Although the main theme of my three papers will deal particularly with the operation side of a Cost System, I also intend to deviate from the parent subject, and describe the means and methods employed not necessarily those of the company with which I am associated but by the various manufacturing concerns in the ascertaining, application and distribution of the primary elements of cost.

This subject, I am aware, is pretty well known by most of us, and by some may be regarded as an unnecessary piece of repetition, but at the outset I will say that I have not the least inclination or desire to repeat what I have heard from others. Some of the views I shall express are distinctly my own, and further, as this paper, I understand, is to be for the edification of the junior members of our Society, I shall at any rate address the major portion of this first paper to those particular individuals.

I am inclined to think that a portion of the senior members are prone to lose sight of the fact, that if the good work of this Society is to make headway in the future, particular care in the instruction of the junior members should be uppermost in the minds of those responsible, and that some of the more advanced papers should be watered down with the judicious addition of material less technical in its outlook.

At one of our meetings recently, the worthy President of this Society spoke to us on "Modern Cost Methods," and during the course of his paper dealt on the fundamentals of cost—namely, material, labor and overhead, but instead

of dealing with them in the order named, he preferred to discourse on them according to their logical sequence in costs, overhead first. Material next in order and labor last of all, and this is the sequence which I intend to pursue.

Most Cost Systems are alike in principle. To my mind the only difference between one cost system and another, seems to be the method of applying those principles; in some cases the difference is great, in others it assumes smaller proportions. Some of the differences appear to one section of Cost Accountants entirely wrong—to others perfectly logical, but, as we are all striving to the one end, namely, that of correctly distributing and allocating of overhead and other legitimate expenses incurred by the process of manufacture, in order that we can ensure the return of same through sales, plus a reasonable amount of profit—and it is well to remember the fact that the return of overhead is equally as important as its correct distribution.

Now, about the first item of Fixed Expense to think about after the location of the plant and purchase of machinery is made, is what amount of rent and heat is to be charged into cost. When a manufacturing concern owns the building it occupies the amount to be charged for rent is based principally on location; there are many other factors of course which are too numerous to mention.

The usual proceedure of distribution is to include the estimated heating expense with that of rent, and distribute the whole over departments on a gross *area* basis.

Our system differs from this method somewhat, and I think is more accurate in its results.

We take the total heating expense of the previous year, such as the amount of coal used, fireman's wages, interest on heating equipment, etc., and weigh the result with our estimated heating requirements for the ensuing year and distribute the charge decided on, over departments on a cubic foot basis.

For instance, I contend that a room measuring say 2 feet in length, 20 feet in width and 18 feet high, takes more heating than a room the same length and width but only 10 feet high, and therefore the cubic foot basis of distribution gives the proper share of heat expense.

In determining the charge for rent, the total square feet divided into the total rent charge gives the unit charge

per square foot. This multiplied by the departments used area in square feet gives the departmental rent expense.

The next item of expense is that of insurance. Unless the members of a manufacturing concern are group of super-optimists, this should be considered a most important item, yet we read almost daily of men who are supposed to possess a large amount of business acumen, that have neglected to give this item the attention it deserves. The basis for determining the amount of insurance to be carried, is the sound value of the property at the time the insurance is issued.

In the case of a new company starting business, with new buildings and machinery, this should be a comparatively simple matter, but with an older established concern this would not prove to be so easy to ascertain.

The "sound value" of plant and machinery is not necessarily that value reflected on the books of account, by taking the difference between the original cost of plant and machinery and the depreciation reserve, as the market value may have increased or perhaps the depreciation used may have been too high or too low a figure.

However, this insurance item of expense is distributed over departments, according to the value of plant and machinery used by each in process of manufacture—the expense being based either on the original cost or replacement value at the time of insuring.

Passing on to the next item of Fixed Expense we deal with that of Taxes.

Property Taxes are distributed on a basis of or original cost of departmental investment.

Taxes on Real Estate and buildings if owned are charged to Real Estate Expense.

Income Tax is a direct charge to Profit and Loss, and is by no means a part of manufacturing expense.

Interest on Investment is our next item. I do not intend to spend any time propounding the various theories why this should, or should not, be charged into the Cost of Production, partly because at the present time the whole thing seems to be a matter of opinion, and partly because I can produce equally good arguments, both for and against its inclusion in costs.

Now for the item Depreciation.

In our branch of industry we have a set rate of depreciation which is 10% per annum on the original cost of machinery or equipment. This, it may be argued, is too high a rate to charge, and in my opinion is rather on the high side, if we only take into consideration the wear and tear of a machine. As a matter of fact we have several machines which have been running continually for considerably over ten years, and are still doing good service, but on the other hand we may have costly machines, which, although up-to-date in every respect at the present time, may at the end of a five year period be very much out of date so far as the rate of production and all round general efficiency is concerned. So it will be quite obvious that the rate of depreciation should be sufficiently high, to recover the cost of such machinery and equipment, before it becomes obsolete or unprofitable. In determining the original cost of a machine, such items as freight, duty, cost of installation, electrical fittings and connections should be included.

The foregoing completes a survey of the principal items of Fixed Charges and my opinion is, that a good knolwedge of the "why and wherefore" of those charges is an absolute necessity to any junior before he makes an attempt to find out the actual workings of a cost system.

Let me illustrate just what I mean.

Supposing I were to show a "green" would-be Cost Accountant round our plant, and during our round of inspection I made a remark to the effect that a certain machine cost us $5.00 per hour to run—and to one who was not versed in Cost Accounting principles this might seem a very high figure, particularly when it was noted that it only required the services of one man to run the machine, and that the wages of this individual amounted to, say, $150.00 per month.

The question would naturally arise as to how we arrived at the $5.00 rate, when the machine in question had worked 100 hours at a wage cost of $150.00 which gives an hour cost of $1.50.

That the element of wages—and perhaps power—are the only items of expense required to run a machine is an undoubted paradox in the minds of a layman; the fact that a machine is charged with rent for the amount of floor space it occupies, or that such an item as depreciation is

a cost of operation, never enters his mind, therefore it is essential to explain these primary elements of cost prior to describing to a junior the inner and more ocmplex working of a Cost System.

Now let us proceed to a survey of those expenses which are governed in their aggregate by the process of manufacture.

The most important of all the current or variable expenses as we all know, is the item of wages, and because of the great importance of this expense, and the accurate detail which is entailed before the true cost of the time expended on a job can be arrived at, particularly in our line of business with its many and varied processes and operations, I purposely intend to reserve my remarks until the next meeting.

We now touch on the expense of Light.

This charge is distributed according to the consumption in the various departments, on a basis of used candle power. Various methods are employed, but the usual way is by dividing the total voltage (in some cases the total number of watts) into the charge for light, and using the resulting unit as a basis for distribution. It is also the usual practise to prorate the light charge equally over a period of twelve months, so that each month will carry an equal portion of lighting expense; strictly speaking this is not keeping entirely within the letter of Cost Accounting, but it has the advantage of saving a lot of valuable time which would have to be expended otherwise.

Power is our next item. This expense is distributed on a basis of horse power hours, and according to each department's consumption. The method employed in the finding the horse power hour, is by multiplying the horse power of the motor running each machine (where there are individual motors) by the monthly running hours, and dividing the result into the charge for power.

In cases where power is generated, and the machines are run from the main shaft, an estimated *lowest* horse power required to run each machine is taken as a basis, and the previous method of computing the charge is made.

Spoilage—This is an item which occurs in every plant—with the possible exception of the liquor business, which more than indemnifies itself by the sale of alcohol, extracted

from the wood of empty barrels, for any item of spoilage it may incur. I have known some plants overlook this expense entirely, and other plants believe the spoilage is of such a negligible quantity that the expense can be carried by the business, and is in consequence ignored.

To ensure the recovery of spoilage expense, a Reserve for Spoilage and spoilage allowance is set on the books. As a basis for arriving at the amount to be set up, a fair estimate is made, gained by past experience of the spoilage cost of the previous year, and this amount apportioned over each of the twelve monthly operating periods. In some cases a percentage of the amount of goods manufactured is used for this purpose.

When an item of spoilage occurs a job order is put through covering the hours expended and material used, and the total amount charged to Reserve for Spoilage.

The item of Department Direct Supplies and Expense, I think, is one which I need not dwell on, as the designation itself is self explanatory.

I will next deal with the subject of Administrative Expenses. I read an article some time ago which said that Administrative Expenses were not an item of cost of manufacture, but rather an expense which had more to do with the selling end of a business, and therefore was logically a Selling Expense—the peculiar part of it was, that a concrete reason was not put forth why it should be considered as such.

But after all, such headings as Selling or Administrative Expenses are simply a distinction in terms, as it is quite obvious that all expenses incurred by a manufacturing business are costs. The term Administrative Expenses conveys the idea to one's mind that it is the cost incurred by the service of administration to the business as a whole, and consequently the nature of its being so covers both the production and the selling of the product. The most important thing to remember then, is in the matter of its proper apportioning and distribution to those activities which it is most intimately connected with.

In our case the largest share of general Administrative Expense is apportioned to General Commercial Expense —which in turn is again distributed over departments and included in the cost of Factory Departments—then a second

portion to Selling Expense, and the third and smallest portion is tacked on to General Factory Expense, which, like General Commercial Expense, is also distributed over departments and included in the Cost of Factory Departments.

We have a set percentage by which we make the segregation of General Administrative Expenses to the foregoing divisions, but of course we have no means of defining the exact proportions in which this expense should be charged to those divisions, but to us the percentage seems fair enough, and the results so far have been satisfactory.

Now that I have dealt with the principal and most important items of expense, which must be charged into cost, let me proceed a little further and explain how to develop the working of the system itself.

First of all, the business is divided into departments, in our case two major departments being the Paper Department and the Lithographing Department, the former, dealing only with those operations which are necessary for the preparation of the paper before it can be passed on to the Lithographing Department. These two major departments are then subdivided, each subdivision being a natural process of manufacture.

The next step is to take each subdivision separately and analyze the respective operations to determine which is chargeable and non-chargeable time—each operation is given a distinctive number, and in some cases we have as many as forty chargeable operations and almost an equal number of non-chargeable ones in a single subdivision. The reason has often been argued, why all the non-chargeable operations could not be represented by one number, but it is absolutely essential in our line of business to segregate this, the value of such a proceeding is only realized, when subsequent orders necessitate an analysis of the previous order manufactured. We can thereby ascertain where an improvement or speeding up of production could be made, which would materially increase our ultimate profit, or if the need arose, the selling price of the product could be lowered in order to meet competition. It may be well to point out here that unlike those people who manufacture a standard article, who can regulate the quantity of output, who can always manufacture to stock when business is not so bright, in short, those whose operating expenses to a cer-

tain extent are of a standard nature. *We* cannot undertake to manufacture an article unless we get an order for it first. Sometimes the demand for the article we manufacture may be very poor, *then* we have to hustle and create a demand, and to be able to secure an order when there is no actual demand, requires a thorough conception of the many and varied operations—both chargeable and non-chargeable—which would be entailed during the process of manufacture, to enable us to put forward an attractive price which will suit both the customer and ourselves—and this is one of the reasons why we keep such an accurate check on every operation.

Having arranged the operations, and decided which is chargeable and non-chargeable time, we begin to search for a suitable unit through the agency of which we can charge the expenses of operation to the individual jobs.

In our branch of industry the Productive Hour is taken as the basis through which to charge our costs.

Where hand labor is the producing factor—the productive man hour is the unit used—in the case of a machine, the productive machine hour is used.

For purposes of costing, the Standard Hour cost is used; this is based on the all-inclusive cost which includes Fixed and Variable Charges, Direct Labor, General Commercial Expense, Stock Handling, Shipping, Selling Expenses.

This Standard Hour Cost, however, does not give the actual cost of a job, but is a fair price based on the average cost for a period sufficiently long to cover varying conditions.

My purpose in preparing this paper, gentlemen, has been merely an effort to illustrate to those younger members (who, like myself, are newly entering the field of Cost Accounting), the fundamental principles which must be mastered before they actually commence to explore into how a Cost System works.

In continuing this paper any further, I should be encroaching upon the subject of the one which I intend to give at our next meeting, so I beg to draw to a close what I believe is the first junior paper read at this chapter.

Plant Maintenance and Costs

By T. S. JARDINE

United Drug Company, Ltd., Toronto

(From a discussion before the Toronto Chapter, December 15, 1926)

UP to the present time, most Cost Accountants have looked upon their work as being solely concerned with Production and Jobbing Costs. We are just beginning to realize the work the Cost Accountant can do in Cost Reduction.

As soon as we start this branch of the work, we begin to develop the engineering view point, and it is this relation between engineering and cost which I wish to present. Here again, the work divides itself into two branches—reduction in manufacturing costs by the use of more efficient machinery and equipment—and reduction of plant maintenance cost. Both of them are engineering problems, and both are too broad to more than sketch an outline of what can be done.

Take the average plant that has grown steadily from a few employees to 400. It started as a one man plant, and seldom has there been any attempt to organize the maintenance work to get better results. They are satisfied to go on as they have been doing, and nearly every time, thousands of dollars are being thrown away. Chimneys smoking, the fireman trying to heat all outdoors instead of making steam, steam leaking from pipes and joints all over the plant, hot water being wasted and minor wastes in every direction. It looks as though an effort were being made to see how much *could be* spent. For such conditions as these the management are to blame, and no one else. It needs only a short walk through the average plant, and one word repeated over and over —"WHY"—to bring results. The HOW is visible; only too visible. WHY is it being allowed to go on? Mostly, it is for the same reason Boston streets are crooked. A cow walked there first, and no one man ever had the energy or initiative to try to straighten them out. Such conditions need only clear thinking and common sense. That is all.

Thought alone is not enough; it must be followed by action. A mistress was talking to her Irish maid-servant about the wonders of "New Thought." She said, "Why, I do not even have to use rouge any more; I just think, and the color flows into my cheeks." The maid replied "Land sakes, Maam, if I thought things like that, never again would I dare to look Father Kelly in the face."

Now, to get back to the engineering view point; there is grave danger to Cost Accountants if they do not wake up and become something more than mere figure jugglers. Business executives of the future will demand more than just mere reports and figures. They want now, and will want more and more, figures that really tell something. It is not enough to be able to say that operation 27 costs 30c. per 100 pieces. We will have to go further and be able to show WHY it cost 30c. and what can be done to lower that cost. This CAN be done, and an estimate worked up to show the possible lowered cost by figuring on additional equipment, or in very many cases merely be rearrangement of machinery or processes.

The one thing emphasizes the necessity for full co-operation between all departments of the business. The Cost Accountant must work in perfect harmony with the Purchasing Department and the Production Departments if wastes are to be eliminated. The moment any one department begins to set up limits and say "Thus far shall you go, and no further," at that same moment the manager of that department has invited the management of the business to request him to take his talents elsewhere. Modern business has no place for isolated activities. They must interlock in every direction.

I fully realize that in many plants the Cost Accountant will be frowned on if he attempts to go outside the field that tradition has allotted to him. It depends on, shall I say, intestinal fortitude, whether he is ever to go further or not.

To do this class of work we do not have to be trained engineers, or even to have a university education. There are available to-day books on almost every subject you can think of. Careful reading, study, visiting other plants to see how they do it, and cold common sense are all that is needed.

You live with these problems every day; they are familiar to you and you can see where suggested changes

will affect other departments and either cause trouble or work out to better advantage. True, an outside man can more easily see outstanding defects that you may pass over through constant familiarity with them, but he cannot possibly know every detail of the business as you should know it. That you MUST know, and WHY things are done as they are. "If you know WHY, you know HOW."

Now, about making proposed changes. The maintenance man or the cost man who even attempts to take all the credit to himself is only asking for trouble. Operating men will make suggestions once; if they do not get fair credit for improvements made on their suggestions, they will shut up like a clam. One "Credit grabber" in a plant can do more to break down good feeling and progress than ten men can build up. What difference does it make who gets the credit? You are judged by final results, not by minor details of improvement. That is where and how the man in charge of a department can make a name for himself and at the same time build up a loyal staff who will fight for him through thick and thin.

It never pays to jump at any suggestion and put it through without due thought. Mull it over, think it out and talk it over with every man who can possibly be affected by any change made. Sell them the idea first, and in selling it you will get suggestions that will make your original idea look foolish. More than that, every man will help you to make the change, not buck it.

The ideal organization is one built up of men, every one of whom is proud of the quality of his work, and eager to better what he has done. Men who think for themselves and who can be trusted in emergencies. Then, progress made will not be the work of any one man. It will be that of all working together.

Definitions

THE definitions below are submitted by Col. R. R. Thompson, C.A., of McGill University, Montreal, not as final statements, but as a means to start discussion. What have you to suggest along this line?

Direct Material—The materials which are fashioned into, and absorbed into the finished product, or the materials out of which the finished product is made.

Direct Labor—The labor which is applied to the direct material whilst it is in process of being fashioned into the finished product. This does not include labor handling the direct material before it goes into process, or when it is passing from one process to another.

Direct Expense—All expenses which can be charged, without apportionment by estimate, directly to a particular job article, or contract, or to a particular process. This will include expenses which have to be apportioned between jobs, articles, contracts, or processes, but which can be measured exactly.

Prime Cost includes: Direct Material; Direct Labor; and Direct Expenses.

Variable Expenses—I would suggest "Expenses varying with production," and that this group should include all those expenses which can be expected to vary with production, such as indirect labor handling material in factory, stores consumed, etc.

Power—The charge for this would come under "Expenses varying with production," but I would suggest that it be shown separately in the Manufacturing Statement.

Machinery—I would suggest that the charges for machinery, power excepted, be grouped together and shown under one item, called Machinery Charge. The charges would include depreciation, insurance, small stores, tools, repairs and renewals, etc.

Semi-Variable Expenses—I would suggest "Expenses which vary but not with production." A shorter title might be, "Controllable Expenses." This would include such charges as repairs to buildings, repairs to machinery (if no special machinery charge), heating, charges for general administration, etc.

Fixed Expenses—All expenses which normally will remain the same no matter how production varies. They will

include such items as Factory Manager's Salary, Salaries of Factory Clerks, Insurance of Machinery (if no Machinery Charge) and Buildings, and Building Charges general.

Inventory — Raw Material and Supplies will include all costs of acquisition up to time material and supplies lie at door of store-house. This will not include costs safeguarding material or supplies whilst they were held up in transit to the factory owing to unusual circumstances; such costs should be written off specially to Profit and Loss.

Inventory — Work-in-Process will include all Prime Cost and Factory Indirect Charges incurred in bringing the partly finished product into its condition at date of inventory.

Inventory — Finished Goods will include all Prime Cost and Factory Indirect Charges incurred in bringing the Finished Goods in the condition in which they are ordinarily saleable to the door of the Factory for transportation to the Finished Goods Warehouse.

The Business Outlook

BANKERS and business leaders look for continued growth and prosperity for Canada in 1927. Growth in volume of business means new opportunities for reduction in unit costs. It is recognized that Canada has laid the foundations for a great nation. We need to just keep on growing.

The following is from the summary of prospects made by Sir Herbert Holt, president of the Royal Bank of Canada:

"We have definitely emerged from the discouraging conditions of the post-war period. The year just closed has been one of steady and substantial improvement in almost every department of Canada's business life, and it is gratifying to know that our greater prosperity is well grounded on the sound foundation of expanding production and commerce. All the familiar indices, such as bank debits, railway traffic, electric power production and commercial loans, give testimony to the greatly improved state of business. A record volume of building and construction is being carried on, manufacturing plants are active and the volume of employment is gratifying. Transportation has profited by the general expansion of trade and the net earnings of our two great railway systems show a marked gain."

NEW BOOKS

Dictionary of Costing.—By R. J. H. Ryall, Fellow of the Institute of Cost and Works Accountants and Member of the National Association of Cost Accountants, New York. 377 pages, $3. Sir Isaac Pitman and Sons, Ltd., 70 Bond Street, Toronto, Canada.

The appearance of a dictionary indicates that knowledge of cost principles and methods is "rounding out." The terms are given in alphabetical order, with an explanation of each and illustrations of forms and mechanical devices. "Costing is comparatively a new science and it is not to be wondered at that inexactitude in terminology has crept in," says Sir George Beharrell, managing director of the Dunlop Rubber Company, Ltd., in a foreword. The author has discarded some terms considered obsolete and clarified the meaning of others. The question of arrangement has evidently been one of difficulty, but he seems to have made the best possible job of it. The book is thus a standard reference, and should remain such for years until the science gets well beyond its present stage. In the publication of this book Pitmans have made an important addition to their valuable series on economics, business and finance.

Accounting Principles and Practice.—By R. G. H. Smails and C. E. Walker, chartered accountants, and instructors in courses in Commerce and Administration, Queen's University, Kingston. 346 pages with index, $4.50. The Ryerson Press, Queen and John Streets, Toronto.

This is the newest volume in Queen's University Business Studies. In size and arrangement the book is similar to other recent works on general accounting. It has 346 pages, with index, is amply illustrated, and handles the subject with credit. In a preface W. A. Mackintosh, professor of Economics at Queen's, points out that while Canadians have in the main adopted the principles and practices of England and the United States, our distinct laws have necessarily left their impress on our accounting methods, and therefore none of the accounting texts published in the other countries wholly meet the needs of Canadians. The

book will be of real value to students and to those who are now engaged at accounting. Its breadth is shown by the fact that there are special chapters on foreign exchange, cost accounts, and the interpretation of financial statements.

Applied Budgeting.—By Henry Bruere, third vice-president, Metropolitan Life Insurance Company, formerly chamberlain and chairman of Mayor's Executive Budget Committee, New York City, and Arthur Lazarus, C.P.A., F.C.W.A., consultant, Policyholders' Service Bureau, Metropolitan Life Insurance Company, formerly chief of the Cost Accounting Bureau, Chamber of Commerce of the United States. Bound in limp leather, 248 pages, with index. A. W. Shaw Company, Chicago.

While the accounting dealt with in this book is of a specialized type, the subject matter as a whole brings out the executive viewpoint, and familiarity with this viewpoint is an essential to the success of the cost accountant. Budgeting in business is defined by the authors as "the summation of plan and judgment respecting the management of the enterprise and the specific relation to that plan of facilities made available or to be made available for its accomplishment in the form of management, finance, plant, labor and materials." It is intelligent planning in financial terms, involving estimates of future revenues and costs. The skilful cost accountant should have his place in such budgeting. After a general chapter on business control through the budget the book describes its application in the following lines: oil, railroads, banks, newspapers and magazines, contracting and construction, metal working, department stores, canners, hotels, ice cream, garments. Much of this material became available through the promotion of group insurance by the Metropolitan Life. A concluding chapter deals with budget essentials.

CHAPTER NOTES

TORONTO

THE address by Mr. George Wilson, president of the Toronto Board of Trade and general manager of the White Pine Bureau, at the Toronto Chapter on January 12 and the discussion which followed, made that meeting one of the most interesting so far held. The subject was "Business Cycles and Industrial Forecasting." Mr. Wilson had a long and successful career as a banker, nad his contact with finance and industry enabled him to treat of this subject in an able and attractive way. The members in their questions and suggestions showed a close interest in the subject.

On January 27 we had J. Allan Ross, on the subject of "Selling and Marketing." Mr. Ross is president of Wm. Wrigley Jr. Co., Ltd., Toronto, and a prominent man in business and financial life, having been elected a director of the Dominion Bank only a few weeks ago. From his experience and success of nineteen years in building up a big Wrigley business in Canada, Mr. Ross understands the subject on which he spoke. He gave the members a broad outline of problems and policies, expressing strong approval of "plowing back" a good proportion of profits, especially in the early days of a business, and where there was room for expansion in its operations. The members brought up a number of points which showed that advertising is one of the subjects with which they are concerned.

The topics at these January meetings were not directly within the field of Cost Accounting, but those for the February meetings are. The address by Mr. Carruthers on "The Operation of a Standard Cost System" on February is one that every Cost Accountant in the city should hear. On the 23rd we will hear J. H. Lithgow on "Costing Life Insurance," a special phase of Cost Accounting that should prove of real interest.

Through the courtesy of the Institute of Chartered Accountants of Ontario, members of our Society attended a meeting in Toronto on December 29, and heard an address by Dr. Joseph C. Snyder, of Harvard University, on Business

Forecasting. F. Page Higgins, President of the Institute, was in the chair. Dr. Synder described methods used at Harvard and results achieved. Four types of fluctuations existed; a secular trend or tendency over a series of years; seasonal variation; irregular movements (strikes, crop failures, war); and a cyclical movement or oscillation from prosperity to depression, and back again. Establishment of a time sequence between certain sets of figures was a step forward, said Dr. Snyder. It was discovered that three groups fluctuated in that way—speculation, industry and trade, and banking—and, in a sense, stock market fluctuations forecast the business trend.

HAMILTON

THE Holiday season has passed and Hamilton Cost Accountants have some time since entered into the rush of end-of-the-year work. Our Chapter has kept up its activities and has held the following meetings since the last Chapter notes were reported:

November 25th, 1926.—Mr. John Craig, President of the Society, spoke before a record breaking audience at the Chamber of Commerce Rooms on "Modernized Cost Accounting." Mr. Craig pointed out defects and inaccuracies in many Cost Systems now in operation and presented interesting views on the logical construction of Cost Systems, supporting his views by a typewritten illustration of the several accounts and the figures entering into them. A copy of this illustration was presented to each member who was thus enabled to follow all Mr. Craig's points clearly. The thoughtfulness of the lecturer in making this provision was much appreciated.

December 16th, 1926.—Mr. A. E. Keen, C.A., gave a very interesting paper on "Wage Incentives" before a well represented audience. A copy of Mr. Keen's paper has been sent to Toronto for publication in "Cost and Management" and therefore we will not discount the treat in store for those whose privilege it will soon be to read it by attempting here to relate anything that Mr. Keen said. The thanks of the Chapter are here conveyed to Mr. Keen for his thoughtfulness in distributing to each member present a typewritten copy of the greater part of his address. Thus did Mr. Keen carry on the good example set by Mr. Craig.

It is a splendid idea—that of distributing copies of figures and addresses—and we hope all our lecturers will keep up the good work.

January 14th, 1927.—Could anyone imagine starting the New Year with anyone better than our old friend, Mr. R. L. Wright? Mr. Wright was in great form. He spoke on "Business Cycles and Industrial Forecasting" and his address was most interesting and of an exceptionally high educational character. We must positively have it published on the very front pages of "Cost and Management." Unfortunately, Mr. Wright spoke from notes and not many of these, but he must be made to produce his address. A lot of interesting discussion arose out of Mr. Wright's remarks as might be well expected with such a large picture presented.

January 27th, 1927.—We are now eagerly looking forward to Mr. A. E. Kappele's address on "Cost Accounting in its Relationship to Municipal Administration." This will be something entirely new and we are sure to have a large audience.

MONTREAL

FROM all points of view our meeting of November 26th was most satisfactory. The attendance is improving, but in order to start more promptly the Secretary has been instructed to approach the management of the transportation system which serves us; some of our members complained out loud that that was the reason for their late arrival; we have not yet been advised by any member that the bus or street car was responsible for their non arrival. Since commencing this session, the Chairman has had the pleasure of welcoming new members at each meeting, this meeting was no exception, there were five new names on the list. The first paper was given by Mr. L. Rhodes, who, while stressing the fact that his remarks were addressed particularly to Junior members, received noticeable attention from all present. This was the first of a series of three papers to be given by Mr. L. Rhodes and it seems as though he has set himself a high standard. The Executive hopes that room will be found in the magazine for the whole series. Mr. G. C. Leroux, Assistant Inspector of Taxation, a member of the Executive, and a hard working one, proceeded to tell us of Administrative Rulings of the Income Tax Act. He kept on telling till 10.45 p.m. and nobody sneaked out,

that's how good he was. When he was finished several members asked questions which were satisfactorily answered, with the method of arriving at the answer given. Mr. A. H. Rowland, a new member, another Income Tax man, went into some of the complications. The meeting expressed entire satisfaction with both papers.

We have just been through the season when Accountants get the "Profit and Loss" look, superinduced no doubt, by anticipating the "Annual Argument." The intelligent use of Cost Accounting will smooth the path and ease the troubled minds of our friends who have started to become accustomed to the "Annual Battle" of Facts vs. Wishes, Generaled by Actual and Theory. These troublesome times have been actually used as an excuse by some of the members for non-attendance at meetings. Even our worthy Chairman, Lorenzo, had so much on his mind that he blamed the Post Office for not reminding him of the hour of meeting on December 10th. This delayed arrival of the Chairman necessitated a dual role by the Secretary, who obtained a little pleasure in ordering himself around for a change. Mr. L. Rhodes took us into the Labor Dept. of the Litho. Industry and improved, if possible, his first part paper, given at a previous meeting. This is an excellent treatise on Cost Accounting, the detail of which is interestingly explained and the possible "error" points brought to light forcibly. Those members who have heard Mr. Rhodes at the last two meetings have expressed a desire to see this paper in the magazine, doubtless with the idea of using the work as a reference. A paper of Mr. Rhodes' type is a valuable addition to any Chapter library and we hope that Montreal members, having heard what can be accomplished in this particular manner, will come forward with similar offers in future. Mr. M. T. Bancroft took us through an "Internal Audit." New ideas developed during this paper, the method of Raw Material and Stores Accounting being particularly interesting. Something new for the Chapter was introduced —Illustrating by means of lantern slides. Pointed remarks were being exchanged and it was noted that some enterprising members were making sketches of the "Tapping" illustrations. Some Cost Accountants are out to make names for themselves by reducing the power bill with a good(?) tapping suggestion. The programme was particularly enjoyable, and it was too bad that Lorenzo missed so much of it.

MEMBERS' PROBLEMS

Number 5

HELP in deciding which of the two following plans of allocating selling expense over selling results is solicited with a view to choosing the better method for the members' company who is submitting this problem.

It is desired to learn which plan—

1—Will be the easier and more economical to handle?

2—Will the results of both be the same—

(a) As to the showing of the individual salesman?

(b) As to the showing of the business barring possible difference in cost of running the two plans explained?

3—Is there a better plan combining many of the advantages of both?

Conditions:—

The company would be considered of medium size in Canada; it is, however, large in the industry which it fosters.

It ships over 2,500 different specifications of product, mostly catalogued and delivered from stock on hand, and 80% of it is manufactured by the company. The value of the product has a great range, viz., from about one cent to ten dollars per article.

The manufacturing is all done adjoining the head office.

The company has in Canada six branches consisting of warehouses of the product, manned by a manager and a shipper and biller. The larger branches employ commission men additionally to the extent of one to three extra men. There are additionally two travellers working out from the head office and not connected with any branch for the districts outside of branch territory.

The branches do their own billing and shipping from warehouse stocks and duplicate bills are sent to head office where the books are all kept and the drafts are issued against accounts receivable.

Branches can collect and accept cheques, depositing locally for transfer to the head office account of the company.

The company does business with customers of different status regulating the trade discount according to status, credit and quantity.

PLAN 1

Every salesman and commission man in the organization is given a symbol.

This is placed on every order entering the head office on arrival and on every duplicate (Bookkeeping) invoice sent in from a branch.

At the month end the sales are analysed into *selling divisions*, each division being identified by the symbol.

At the same time these sales are all refigured by means of taking off a higher discount estimated to be about 10% to 15% over factory cost. This discount is a uniform percentage of the catalogue price as also is the customer's discount whenever possible so that the refiguring is very simple, in spite of the 2,500 specifications catalogued for sale.

The selling expenses are classified according to the same selling divisions as those in which the sales are credited.

The main selling expense consists of salary and expenses or commissions for those men working independently of any branch from head office. Each branch's expenses are classified into Branch General Expense Account and Branch Selling Expense Account although in the case of a small branch manned by one combined salesman and manager this is not done.

Those salesmen deriving a benefit from the branch by having their merchandise for immediate delivery must absorb all the branch expense between them.

As the branch manager gets credit for all branch business that does not come under the division of one of his branch salesmen his division is charged with the whole of the branch selling expense account.

The branch petty cash expenditure is analysed into the selling divisions of the branch and the head office charges 90% of the branch manager's salary to the branch selling expense account and 10% to the branch general expense account.

The branch general expense account is prorated over the selling divisions embraced within the branch.

The final step is to take out every expense account covering selling and administrative expenses in the general ledger of the company that are not already charged to a selling division and prorate them on the basis of cost of goods shipped thereby clearing all accounts into selling divisions.

The profit or loss from each selling division aggregated gives the net profit for the company to be modified by the profit from manufacturing and purchasing finished merchandise at a lower rate than that at which the selling divisions have been charged.

In this plan the merchandise is not charged financially to the warehouses at the branch offices but a perpetual inventory is maintained at the head office covering each branch and is very difficult to keep properly owing to the number of specifications stocked and the fact that the presence of the branch in any vicinity encourages the customers to order from hand to mouth.

PLAN 2

This plan consists of charging the branches with all merchandise shipped to their warehouses and crediting an account called "Branch Consignments."

Each branch is charged up at the price at which the selling divisions were to be charged under Plan 1 except in the case of bought merchandise which is charged at cost to the branch offsetting the credits to the vendors of the goods in the purchase ledger maintained at the home office (the voucher system is not advocated).

The branch accounts are to be set up at the financial year commencement in the accredited manner by debiting merchandise, cash, and accounts receivable and furniture and fixtures in the branch books and crediting any accounts payable out of branch petty cash, reserve for bad debts and "home office" with the balance. The bank deposit accounts being transferrable to head office, are not held within the subsidiary ledgers, but the head office credits them with all money deposited.

The head office ledger keeps a control account for each branch being negative to the home office account in the branch subsidiary ledgers.

Each year a man is sent from home office to supervise the taking of inventory at each branch. The only exceptions to this plan are where the branch is located too far away from the home office and in the case of these branches a perpetual inventory is maintained the same as it is in *all* branches under plan 1.

Under this plan a regular trading profit and loss statement is issued for each branch.

Where the branch is only manned by the one salesman this does not have to be analysed any further but the profit and loss, of course, cannot be taken except as a comparative figure to set against the profit or loss shown on the same basis covering each of the other branches.

The branches under this plan can be charged with a proportional share of home office expense accounts which are credited to expense accounts in the general ledger without interfering with the comparative data as between the branches, but if this is done the branches must also be credited with a portion of the manufacturing profit for purposes of provincial taxation assessment, as the branches are in different provinces.

In the case of the branches having a manager and several salesmen on different bases of remuneration, the profit or loss from each selling division within the branch is determined in the usual way.

The men working from head office that are not connected with any branch are kept account of in the general ledger.

The Five-Day Week

ONE of the foremost industrial questions of this year will involve the pros and cons of the suggested five-day week for labor. Officials of some of the largest industrial concerns of the country already have expressed their views on the proposition, and some of the conclusions drawn from these expressions have been summarized by the "Pocket Bulletin" of the National Association of Manufacturers as giving an emphatic negative to the question: Will the five-day week be adopted generally by the industries of the country? It will not, for the following chief reasons:

1. It would greatly increase the cost of living.

2. It would increase wages generally by more than fifteen per cent. and decrease production.

3. It would be impracticable for all industries.

4. It would create a craving for additional luxuries to occupy the additional time.

5. It would mean a trend toward the Arena; Rome did that and Rome died.

6. It would be against the best interests of the men who want to work and advance.

7. It would be all right to meet a sales emergency but would not work out as a permanent thing.

8. It would make us more vulnerable to the economical onslaughts of Europe, now working as hard as she can to overcome our lead.

From the worker's viewpoint a real danger would lie in reasons four and six, as we pointed out in a special article in last month's issue—it would create a craving for additional luxuries to occupy the additional time; it would be against the best interests of the men who want to work and advance. It will be soon enough to talk about more leisure when we have learned to make better use of what we now have. And there is a danger not to be treated lightly in the present "trend toward the Arena."

—From "The Valve World," Chicago.

POSITIONS DESIRED

No. 253—Age 27. Experience as office manager with charge of general accounting and cost work, distribution and analysis of cost figures, monthly profit and loss statements. Acquainted with secretary-treasurer's duties. Salary, $2,500.

No. 254—Age 32, married, 10 years cost experience; last 8 years in full control of cost department of large firm. Salary, $2,500.

No. 255—Age 36, married, 14 years cost accounting, covering installation of system, time study, payroll distribution, material control and productive work; comparative reports and monthly statements.

No. 256—Experienced Accountant, 5 years Chartered Accountant's office; full range of accountancy work including costing. Good references.

No. 257—Junior position—10 years' experience accountancy and cost work; cost estimation and analysis.

No. 258—Cost Accountant, at present in full charge of cost department; experience in different plants; also 4 years' general office work. Student of La Salle and Alex. Hamilton Institute.

No. 259—9 years in Maritimes; full experience casting valves and fittings, both brass and iron; competent in piece work and production management.

No. 260—22 years, single; 2½ years as assistant Cost Accountant in large box factory; general office experience and sales. Salary, $1,200 to $1,500.

No. 261—Age 24; six months' banking; 4 years in charge of books of branch factory, including costing, payroll work, customs and export, etc.; 2 years general office work; La Salle student in Higher Accountancy.

No. 262—Aged 35; married; 7 years' experience with firm of Chartered Accountants, including cost work. At present employed by manufacturing concern.

The Canadian Society of Cost Accountants

APPLICATION FOR MEMBERSHIP

Name in full ..... Age .....

Address in full .....

Firm with whom engaged .....

Firm's address in full .....

Firm's Business ..... Position held .....

Names and addresses of two references:

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(If applicant is a Member of any Accounting Institute or Society incorporated under the authority of any Provincial Legislature, it will be sufficient to give the name and address of the Secretary of such Institute or Society.)

To R. S. Smith, Hon. Secy., 77 Commissioner Street, Toronto.

I hereby apply to be admitted a Member of The Canadian Society of Cost Accountants and undertake if admitted to observe all the By-laws and Regulations of the Society for the time being in force.

I enclose herewith ..... Dollars, being my Membership fee to the end of the current half year, which is to be returned to me if this application is not accepted.

SIGNATURE OF APPLICANT .....

DATE .....